

## Measure Information Template (JH-10)

**Category:** Nonresidential – mechanical.

**Description:** Require economizers for smaller units per ASHRAE/IESNA Standard 90.1, Section 6.3.1, and Seattle Energy Code Sections 1423/1433.

(1) Title 24, Part 6, Section 144. Prescriptive Requirements for Space Conditioning Systems:

Require economizers for smaller units per ASHRAE/IESNA Standard 90.1 and Seattle Energy Code Sections 1423/1433. *Economizer should be utilized more fully in California's mild climates.*

**Code Language Proposal:**

- Title 24, Part 6, Section 144. Prescriptive Requirements for Space Conditioning Systems (pages 99-101).

### Title 24, Part 6, SECTION 144

#### – PRESCRIPTIVE REQUIREMENTS FOR SPACE CONDITIONING SYSTEMS

*(revisions to subsection e only in this proposal, other subsections to remain unchanged)*

(e) **Economizers.**

1. Economizers shall be installed on the following systems, including those serving computer server rooms, electronic equipment, radio equipment, telephone switchgear. Single package unitary fan-cooling units installed outdoors or in a mechanical room adjacent to outdoors with a total cooling capacity greater than 20,000 Btu/h, and other individual cooling fan systems that have a total mechanical cooling capacity over 65,000 Btu/hr. shall include either:

- A. An air economizer capable of modulating outside-air and return-air dampers to supply 100 percent of the design supply air quantity as outside-air; or
- B. A water economizer capable of providing 100 percent of the expected system cooling load as calculated in accordance with a method approved by the commission, at outside air temperatures of 50°F dry-bulb/45°F wet-bulb and below.

**EXCEPTION 1 to Section 144 (e) 1:** Where it can be shown to the satisfaction of the enforcing agency that special outside air filtration and treatment, for the reduction and treatment of unusual outdoor contaminants, makes compliance infeasible.

**EXCEPTION 2 to Section 144 (e) 1:** Where the use of outdoor air for cooling will affect other systems, such as humidification, dehumidification, or supermarket refrigeration systems, so as to increase overall building source energy use.

**EXCEPTION 3 to Section 144 (e) 1:** Systems serving high-rise residential living quarters and hotel/motel guest rooms.

**EXCEPTION 4 to Section 144 (e) 1:** Where electrically operated unitary air conditioners and heat pumps have cooling efficiencies that meet or exceed the efficiency requirements of Tables 1-X1 and 1-X2.

2. If an economizer is required by Subparagraph 1, it shall be:
  - A. Designed and equipped with controls so that economizer operation does not increase the building heating energy use during normal operation; and

- B. Capable of providing partial cooling even when additional mechanical cooling is required to meet the remainder of the cooling load.

**EXCEPTION to Section 144 (e) 2 A:** Systems that provide 75 percent of the annual energy used for mechanical heating from site-recovered energy or a site-solar energy source.

3. Air-side economizers shall have high limit shutoff controls complying with Table 1- X3.

**Table 1-X1 – Economizer Tradeoff Table for Electrically Operated Unitary Air Conditioners**  
(revise as necessary to correspond with new equipment efficiencies)

**Table 1-X2 – Economizer Tradeoff Table for Electrically Operated Unitary Heat Pumps**  
(revise as necessary to correspond with new equipment efficiencies)

**Table 1-X3 – Air Economizer High Limit Shut Off Control Requirements**  
(no proposed changes)

**Benefits:** Economizer should be utilized more fully in California’s mild climates.

**Environmental Impact:** Energy savings.

**Type of Change:** Prescriptive.

**Measure Availability and Cost:** Economizers are widely available.

**Useful Life, Persistence and Maintenance:** Same as current economizer.

**Performance Verification:** Same as current economizer.

**Cost Effectiveness:** Economizers are required for smaller units in ASHRAE/IESNA Standard 90.1, Section 6.3.1, and Seattle Energy Code Sections 1423/1433.

**Analysis Tools:** NA.

**Relationship to Other Measures:** NA.

**Bibliography and Other Research:** Economizers are required for smaller units in ASHRAE/IESNA Standard 90.1, Section 6.3.1, and Seattle Energy Code Sections 1423/1433.